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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/774,691

02/10/2004

Tuomo Lehtonen

59244.00009

7362

32294

7590

10/18/2005

SQUIRE, SANDERS & DEMPSEY L.L.P.

14TH FLOOR

8000 TOWERS CRESCENT

TYSONS CORNER, VA 22182

EXAMINER

CHAPMAN JR, JOHN E

ART UNIT

PAPER NUMBER

2856

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/774,691

Applicant(s)

LEHTONEN, TUOMO

Examiner

John E. Chapman

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5,7-10,12-17,19-24 and 26-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5,7-10,12-17,19-24 and 26-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/14/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 31 is rejected under 35 U.S.C. 112; first paragraph, as failing to comply with the enablement requirement. The claim contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not adequately teach how to linearize the output of the acceleration sensor with respect to a change in capacitance by selecting a number of pairs of electrodes and their orientations.

4. Claims 1, 3, 5, 7-10, 12-17, 19-24 and 26-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, there is no proper antecedent basis for "the pairs of electrodes" in line 9. Note that more than one pair of electrodes is not positively recited until lines 11-12. It is not clear that the "pairs of electrodes" recited in line 9 refers to the "more than one pair of electrodes" recited in lines 11-12.

Claim 3 is vague and indefinite. It is not clear what is meant by shapes of the pairs of electrodes being “selected in relation to the number of pairs of electrodes.” In Fig. 2, for example, there are two pairs of electrodes. How are the shapes of the electrodes selected in relation to two? It is not clear how one could determine from an inspection of a device whether the shapes of the electrodes had been “selected in relation to the number of pairs of electrodes.”

5. Claims 1, 3, 5, 7-10, 12-15 and 30, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Negoro.

Negoro discloses a capacitive acceleration sensor in Fig. 6 comprising two pairs of electrodes (7'A, 8'A) and (7'B, 8'B), the movable electrodes 7'A and 7'B being rigidly supported for rotation about an axis of rotation Z. Note that the beams 4A and 4B may be described as having a “flexure axis” or “axis of rotation” about which the weights 5A and 5B rotate, generally located from pedestal 6 by a distance one-third the length of the beam. See, for example, Cole (4,736,629) in which beam 64 in Fig. 2 is described as having a flexure axis 64 about which the movable plate 50 rotates (column 6, lines 10-16). The electrode pairs are positioned symmetrically in relation to a “symmetry reference plane” and, consequently, several axes of symmetry. The acceleration sensor is a multi-axis sensor. See column 13, lines 33-36.

Regarding claim 3, the electrode pairs are “selected in relation to the number of pairs of electrodes” in that they are arranged mutually at a plane angle of $360^\circ/N$, where N is the number of pairs of electrodes. See column 14, lines 19-29.

Regarding claim 30, electrode pairs (7'A, 8'A) and (7'B, 8'B) in Fig. 6 are redundant with respect to acceleration in the Y direction.

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6. Claims 17, 19-22, 24, 26-28 and 31, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Negoro.

Regarding claims 17 and 24, Negoro teaches forming a capacitive acceleration sensor using N acceleration detection devices, where $N \geq 3$ (column 14, lines 19-29). It would have been obvious to one of ordinary skill in the art to choose $N=4$ or 8. Where the prior art discloses a range of values (such as, $N \geq 3$), and there is no showing of criticality of the recited range (such as, $N=4$ or 8), such recited range is generally considered to be obvious to one of ordinary skill in the art. See *In re Reven*, 390 F.2d 997, 156 USPQ 679 (CCPA 1968).

Regarding claim 31, it is well known within the art to provide linearization in order that the output signal is proportional to the input acceleration.

7. Claims 16, 23 and 29, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Negoro in view of Cole.

Regarding claims 16 and 23, as defined by applicant (paragraph 50 of the specification of the present application), the “negative direction” is understood to be the direction from the center of gravity (G) to the support axis 6 in Negoro. Accordingly, the only apparent difference between the claimed invention and the prior art consists in supporting the beams 4A and 4B at a central position 12 in Fig. 4 in lieu of the outer positions 6, such that the vectors in the “negative direction” intersect at essentially one point. Cole discloses a pair of beams 148 and 150 centrally supported by pedestal 146. It would have been obvious to one of ordinary skill in the art to support the beams 4A and 4B of Negoro at a central position 12 in Fig. 4 in lieu of the outer positions 6, which difference would have been an obvious rearrangement of elements in view of

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Cole. The mere reversal of components in a prior art reference, where there is no disclosed significance to such reversal, is generally considered to be a design consideration within the skill of the art. See *In re Gazda*, 219 F.2d 449, 104 USPQ 400 (CCPA 1955); *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950).

Regarding claim 29, Cole teaches forming the beams 148 and 150 such that the beams have different moments about the pedestal, i.e., such that they measure different ranges of acceleration.

8. Applicant's arguments filed September 1, 2005 have been fully considered but they are not persuasive. Applicant argues that Negoro fails to teach that the axis of rotation is formed such that the movable electrode of the acceleration sensor is rigidly supported at the axis of rotation such, that the movable electrode is free to turn in a rotational motion about the axis of rotation and that the position of the pairs of electrodes is selected symmetrically in relation to axes of symmetry, in the context of a multi-axis acceleration sensor. However, Negoro teaches in Fig. 6 a movable electrode 7'A of an acceleration sensor 1A that is rigidly supported by a beam 4A, wherein the movable electrode is free to turn in a rotational motion about an axis of rotation (located from pedestal 6 by a distance approximately one-third the length of the beam 4A). Furthermore, the capacitive acceleration sensor in Fig. 6 comprises two pairs of electrodes that are symmetrically arranged in relation to a symmetry reference plane, and provide a two-axis acceleration sensor. Accordingly, it is not evident that Negoro fails to teach any of the features recited.

Applicant further argues that Cole fails to cure the deficiencies of Negoro. However, since applicant has not clearly identified any deficiency in Negoro, such argument is not persuasive.


9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John E. Chapman whose telephone number is (571) 272-2191. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


John E Chapman
Primary Examiner
Art Unit 2856